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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
BURCH, MELODY M

ART UNIT	PAPER NUMBER
3683	

DATE MAILED: 07/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/850,354	CROMBEZ ET AL.
	Examiner	Art Unit
	Melody M. Burch	3683

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 May 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

- On pg. 5 line 11 the phrase "will located" should be reworded.

Appropriate correction is required.

2. The abstract of the disclosure is objected to because the reference to element (7) in line 1 does not encompass all of the embodiments of the invention. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re: claim 1. The phrase "a second wheeled axle, non-driven..." in line 4 is unclear. It is unclear to the Examiner as to which element is non-driven. Examiner recommends language similar to that used in claim 4 line 3.

Re: claim 4. Claim 4 recites the limitation "said electric regenerative braking" in lines 1-2 from the bottom. There is insufficient antecedent basis for this limitation in the claim.

Re: claims 5 and 14. Claims 5 and 14 recite the limitation "the headroom" in

line 3 and 2, respectively. There is insufficient antecedent basis for this limitation in the claim.

Re: claim 7. The phrase "internal combustion engine with only friction brakes" in the last two lines of the claim is indefinite. The claim reads as if the engine has the friction brakes. Clarification is required.

Re: claim 12. Claim 12 recites the limitation "said braking requirement" in Line 2 from the bottom. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5378053 to Patient et al. Patient et al. disclose the limitation of an electric vehicle comprising a first wheeled axle inherently associated with front wheels 11,13 being electrically driven with only electric regenerative brakes as disclosed in col. 2 line 51-52 and shown in figure 2; a second wheeled axle inherently associated with rear wheels 111,113, non-driven as disclosed in col. 2 line 60 and with only friction brakes as disclosed in col.3 lines 17 and 21 and as shown in figure 2. Examiner maintains that, as broadly claimed, the first wheeled axle is electrically driven with only electric

regenerative brakes in braking operations that remain below a maximum as disclosed in col. 2 lines 51-52.

Re: claim 2. Patient et al. disclose in figure 2 the limitation of the front wheeled axle or the axle on which wheels 11,13 are located is a front axle.

Re: claim 3. Patient et al. disclose in figure 2 the limitation of the rear wheeled axle or the axle on which wheels 60,62 are located is a rear axle.

Re: claim 4. Patient et al. disclose a method of braking an electric vehicle which has a first wheeled axle associated with wheels 11,13 electrically driven with electric regenerative brakes and a second wheeled axle associated with wheels 111,113 which is non-driven and with only friction brakes, the method comprising: electrically regeneratively braking the first axle to a first level and frictionally braking the second axle to provide a braking force upon the vehicle greater than the electric regenerative braking as disclosed in col. 2 lines 50-55.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patient et al. in view of US Patent 5589743 to King. Patient et al. implicitly disclose the limitation of a method of sensing the headroom available for regeneratively braking the vehicle in

col. 2 lines 47-48 by virtue of the sensing of when the regenerative braking reaches a maximum, but does not disclose that that once the regenerative braking reaches the maximum, power is dissipated to provide additional regenerative braking for the vehicle. King teaches in col. 4 lines 30-33 the use of the step of determining the headroom available for regenerative braking and dissipating power through a resistor to provide additional regenerative braking due to the newly created available headroom. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of providing supplemental friction braking after exceeding the maximum regenerative braking point of Patient et al. to have included the step of dissipating power to enable further regenerative braking, as taught by King, in order to provide an alternate efficient means of braking the vehicle when braking demands increase beyond a certain level. The alternate means is efficient in the sense that it reduces the necessary amount of friction braking which helps to prevent shoe wear that results from excessive friction braking.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patient et al. in view of US Patent 5589743 to King as applied to claim 5, and further in view of Wong et al. Wong et al. teach in col. 1 lines 22-23 the use of thermal resistors. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the resistor of Patient et al., as modified, to have included a thermal resistor, as taught by Wong et al., in order to provide a means of protecting the device from damage due to excessive amounts of heat dissipation.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5627438 to Barrett in view of Japanese Patent JP-11275708 (using US Patent 6120115 to Manabe as an English equivalent). Barrett shows in figure 8 and discloses in col. 10 lines 10-17 a vehicle comprising: a first wheeled axle shown in the area of element number 106 electrically driven and a second wheeled axle shown in the area of element 114 driven by an internal combustion engine, but does not specifically disclose the limitations of the first wheeled axle being electrically driven with only electric regenerative brakes and the second wheeled axle with only friction brakes. Manabe teaches in figure 1 and in col. 10 lines 54-57 the limitation of a first wheeled axle 24,26 on which wheels 10,12 are located being electrically driven with only electric regenerative brakes; an unnumbered second wheeled axle on which wheels 60,62 are inherently located driven with only friction brakes. Examiner maintains that the phrase "at least regenerative braking energy" in the Manabe reference encompasses the situation of having only regenerative brakes (on the first wheeled axle on which wheels 10,12 are located) as the supply of braking energy at the very least. Also, figure 1 and col. 4 lines 48-59 disclose the limitation of the regenerative brakes being electric to the same extent as Applicant's.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the vehicle of Barrett to have included the first wheeled axle being driven electrically with only electric regenerative brakes and the second wheeled axle by only friction brakes, as taught by Manabe, in order to provide a means of efficiently providing sufficient braking force to decelerate the vehicle.

Re: claim 8. Manabe teaches in col. 3 lines 7-9 the limitation of the internal combustion engine being able to additionally compression brake. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the braking means of Barrett, as modified, to have included compression braking on the second axle, in view of the teachings of Manabe, in order to provide a means of supplementing the existing braking mechanism.

Re: claims 9 and 10. Barrett discloses the limitation of the first wheeled axle being a front axle and the first wheeled axle being a rear axle by stating that the orientation, front or rear, of the electric motor or the engine is arbitrary as disclosed in col. 10 lines 17-18.

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5627438 to Barrett in view of Japanese Patent JP-11275708 (using US Patent 6120115 to Manabe as an English equivalent) as applied to claim 7 and further in view of JP-07135701. JP-07135701 teaches the limitation of an engine 11 and a second motor generator powering a wheeled axle. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the vehicle of Barrett, as modified, to have included a second motor in addition to the engine in connection with the second wheeled axle, as taught by JP-07135701, in order to provide a means of redundancy to better ensure the transmission of power to drive the wheeled axle.

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5627438 to Barrett in view of Patient et al. Barrett shows in figure 8 and

discloses in col. 10 lines 10-17 a method of braking a vehicle comprising: a first wheeled axle shown in the area of element number 106 electrically driven and a second wheeled axle shown in the area of element 114 driven by an internal combustion engine, but does not specifically disclose that the first wheeled axle is electrically driven with only electric regenerative brakes and the second wheeled axle with friction brakes or the method of braking the vehicle such that electrically regeneratively braking the first wheeled axle up to a first level and frictionally braking the second wheeled axle when the braking requirement of the vehicle is above the first level. Patient et al. teach a method of braking an electric vehicle which has a first wheeled axle associated with wheels 11,13 electrically driven with only electric regenerative brakes up to a maximum and a second wheeled axle associated with wheels 111,113 with friction brakes, the method comprising: electrically regeneratively braking the first axle to a first level and frictionally braking the second axle to provide a braking force upon the vehicle greater than the electric regenerative braking as disclosed in col. 2 lines 50-55. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the vehicle of Barrett to have included the first wheeled axle being driven electrically with only electric regenerative brakes and the second wheeled axle by only friction brakes, as taught by Patient et al., in order to provide a means of efficiently providing sufficient braking force to decelerate the vehicle.

13. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5627438 to Barrett in view of Patient et al. as applied to claim 12, and further in view of JP-07135701. JP-07135701 teaches the limitation of an engine 11 and a

second motor generator powering a wheeled axle. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the vehicle of Barrett, as modified, to have included a second motor in addition to the engine in connection with the second wheeled axle, as taught by JP-07135701, in order to provide a means of redundancy to better ensure the transmission of power to drive the wheeled axle.

14. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5627438 to Barrett in view of Patient et al. as applied to claim 12 above, and further in view of King. Barrett, as modified, describes the invention substantially as set forth above. King teaches in col. 4 lines 30-33 the use of the step of determining the headroom available for regenerative braking and dissipating power through a resistor to provide additional regenerative braking due to the newly created available headroom. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of providing supplemental friction braking after exceeding the maximum regenerative braking point of Barrett, as modified, to have included the step of dissipating power to enable further regenerative braking, as taught by King, in order to provide an alternate efficient means of braking the vehicle when braking demands increase beyond a certain level. The alternate means is efficient in the sense that it reduces the necessary amount of friction braking which helps to prevent shoe wear that results from excessive friction braking.

15. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5627438 to Barrett in view of Patient et al. and King as applied to claim 14

above, and further in view of Wong et al. Wong et al. teach in col. 1 lines 22-23 the use of thermal resistors. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the resistor of Barrett, as modified, to have included a thermal resistor, as taught by Wong et al., in order to provide a means of protecting the device from damage due to excessive amounts of heat dissipation.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents: 5769 to Feigel et al. teaches a vehicle with electric braking on the driven axle for smaller braking demands and friction braking on the non-driven axle see col. 4; 539900 to Aoki et al. teach in the abstract the use of only regenerative braking of the driven axle during initial braking; 3621929 to Oberthur, 4270806 to Venkataperumal et al., 4181366 to Dobner, 5472265 to Ohnuma, and 5632534 to Knechtges teach the similar inventions of vehicles including combined regenerative and conventional (hydraulic/friction) braking, 5465806 to Higasa et al. and 5707115 to Bodie et al. teach the use of regenerative braking, and 5343970 to Severinsky teaches the use of a hybrid electric vehicle, 5865154 teaches in col. 1 the use of engine or compression braking to supplement a vehicle's existing braking mechanism.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melody M. Burch whose telephone number is 703-306-4618. The examiner can normally be reached on Monday-Friday (7:30 AM-4:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Lavinder can be reached on 703-308-3421. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

mmb 7/19/02
mmb
July 19, 2002

7.22.02
MATTHEW C. GRAHAM
PRIMARY EXAMINER
GROUP 310